

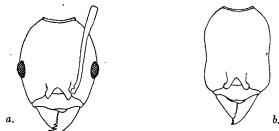
[Reprinted from PSYCHE, Vol. XXIII, No. 5]

## AN ANOMALOUS BLIND WORKER ANT.

BY WILLIAM MORTON WHEELER.

Several years ago Prof. C. F. Baker sent me from Catalina Island, Calif., a number of ants which I described as *Aphænogaster patruelis* Forel var. *bakeri*. Later he gave me a vial of additional specimens from the same colony. While mounting these I detected among them a single eyeless worker, which seemed to be worth describing and figuring as, to my knowledge, nothing like it has been seen in the genus *Aphænogaster* nor, indeed, in any

other genus of ants possessing well-developed eyes in the normal workers. The workers of *Aphænogaster bakeri*, like those of all the species of the genus, are monomorphic or very feebly polymorphic, and the eyes, though not large, are nevertheless well developed. The exceptional specimen is in all respects normal except in the shape of the head and the absence of visual organs.



a. Head of normal worker of *Aphænogaster patruelis* Forel var. *bakeri* Wheeler. b. Head of eyeless worker of same.

The head, as will be seen from a comparison of the figures, is sub-oblong and the sides, especially at the middle, are very distinctly concave, probably owing to an absence of the optic ganglia. On the left side the integument, where the eye should be, is slightly rugose and presents what appears to be a single minute, pigmented ommatidium; on the right side the integument in the corresponding concavity is smooth and rather pale. That the eyeless individual had been living and working for some time like its normal sisters is shown by its mature coloration and the blunted teeth of its mandibles.

As colonies of *Aphænogaster* contain, as a rule, only a single fertile queen, it is very probable that the anomalous specimen above described and the normal workers are all daughters of the same mother. We may, therefore, assume that the eyeless worker is a mutation, strictly comparable with the eyeless specimens that have appeared in certain cultures of the fly *Drosophila*, and we might infer that the normally eyeless workers and females of such ant genera as *Dorylus* and the corresponding phases of certain species of *Eciton*, in which the eye is reduced to a single ommatidium, arose as similar mutations. We might be tempted, moreover, to extend this inference to other peculiarities of worker ants,

since many such peculiarities are merely suppressions or absences of structures that are well developed in the males and females of the same species. I doubt, however, whether we are justified in drawing such a sweeping conclusion in the face of numerous facts which indicate even more forcibly that the worker characters have arisen from continuous and fluctuating variations. In many genera of ants with polymorphic workers (*Camponotus Pheidole*, etc.) and in many genera containing numerous species, though with monomorphic workers (*Solenopsis*, *Monomorium*, etc.) the eyes show a gradual or serial diminution. Discontinuity may, therefore, be conceived to arise in the development of these structures by a selective survival of certain stages or phases, just as it does in the series of species or of dimorphic workers of the same species. The absence of wings is another character in worker ants which is sometimes supposed to have arisen as a mutation, but, though very rare, anomalous workers with vestigial wings (pterergates) are known to occur. I have recorded and figured such cases in *Myrmica* and *Cryptocerus*, and others have been observed in the former genus by Wasmann and Donisthorpe. Recently I have found an even more instructive case, an Australian *Monomorium*, allied to *M. rothsteini* Forel, the normal females of which have very small wings, too small to be of any service as organs of flight. These females, which will be described and figured in a future paper, are, in fact, truly brachypterous, like certain well-known species of Diptera, parasitic Hymenoptera, Heteroptera and Orthoptera, and suggest that the complete loss of wings in the worker is merely the final stage in a gradual diminution of these organs and has, therefore, originated from continuous variations. As the worker phase of the ants must have been perfected and fixed as a family character not later than the Eocene Tertiary and probably as early as the Cretaceous, it is not surprising that at the present time organs characterizing stages intermediate between the workers and females should be so rarely resuscitated as anomalies.